

Ephemeris for Determining the Positions of the Satellites of Uranus, 1878.

By A. Marth, Esq.

	ob ^g G.M.T. 1878.	Ariel, long. °	Ariel, diff. °	Umbriel, long. °	Umbriel, diff. °	Titania, long. °	Titania, diff. °	Oberon, long. °	Oberon, diff. °
Jan. 25	103.99	714.17	358.25	434.33	353.63	206.73	288.69	133.67	
30	98.16	.16	72.58	.32	200.36	.73	62.36	.67	
Feb. 4	92.32	.15	146.90	.32	47.09	.72	196.03	.67	
9	86.47	.15	221.22	.31	253.81	.73	329.70	.67	
14	80.62	.14	295.53	.31	100.54	.72	103.36	.66	
19	74.76	.14	9.84	.31	307.26	.72	237.02	.66	
24	68.90	.13	84.15	.30	153.98	.72	10.68	.66	
Mar. 1	63.03	.13	158.45	.30	0.70	.72	144.34	.66	
6	57.16	.12	232.75	.30	207.41	.71	278.01	.67	
11	51.28	.12	307.05	.30	54.13	.72	51.67	.66	
16	45.40	.12	21.35	.29	260.85	.72	185.33	.67	
21	39.52	.11	95.64	.30	107.57	.72	319.00	.66	
26	33.63	.11	169.94	.29	314.29	.72	92.66	.67	
31	27.74	.11	244.23	.30	161.02	.73	226.33	.67	
Apr. 5	21.85	.11	318.53	.30	7.74	.72	0.00	.67	
10	15.96	.11	32.83	.29	214.47	.73	133.67	.68	
15	10.07	.11	107.12	.30	61.20	.73	267.35	.68	
20	4.18	.11	181.42	.30	267.93	.73	41.03	.68	
25	358.29	.11	255.72	.31	114.66	.74	174.71	.68	
30	352.40	.11	330.03	.31	321.40	206.74	308.39		
May 5	346.51	714.11	44.33	434.30	168.14	82.08	133.69		

These longitudes of the satellites are reckoned in their orbits from the points where they are at their greatest northern elongations. Their position-angles p_o at these points, and the logarithms of the semi-axes a and b of the apparent orbits are the following:—

G.M.T. 1878.	p_0	Ariel.		Umbriel.		Titania.		Oberon.	
		log. a	log. b						
Jan. 25	8°13	1°1812	0°6528	1°3252	0°7968	1°5401	1°0117	1°6663	1°1379
	30	8°19	1°1819	0°6584	1°3259	0°8024	1°5408	1°0173	1°6670
Feb. 4	8°24	1°1825	0°6639	1°3265	0°8079	1°5414	1°0228	1°6676	1°1490
	9	8°30	1°1829	0°6693	1°3269	0°8133	1°5418	1°0282	1°6680
14	8°35	1°1831	0°6746	1°3271	0°8186	1°5420	1°0335	1°6682	1°1597
	19	8°41	1°1831	0°6796	1°3271	0°8236	1°5420	1°0385	1°6682
24	8°47	1°1829	0°6843	1°3269	0°8283	1°5418	1°0432	1°6680	1°1694
	Mar. 1	8°53	1°1825	0°6887	1°3265	0°8327	1°5414	1°0476	1°6676
6	8°59	1°1819	0°6927	1°3259	0°8367	1°5408	1°0516	1°6670	1°1778
	11	8°64	1°1812	0°6963	1°3252	0°8403	1°5401	1°0552	1°6663
16	8°69	1°1803	0°6994	1°3243	0°8434	1°5392	1°0583	1°6654	1°1845
	21	8°74	1°1792	0°7021	1°3232	0°8461	1°5381	1°0610	1°6643
26	8°79	1°1780	0°7042	1°3220	0°8482	1°5369	1°0631	1°6631	1°1893
	31	8°83	1°1766	0°7059	1°3206	0°8499	1°5355	1°0648	1°6617
Apr. 5	8°86	1°1751	0°7070	1°3191	0°8510	1°5340	1°0659	1°6602	1°1921
10	8°89	1°1735	0°7076	1°3175	0°8516	1°5324	1°0665	1°6586	1°1927
	15	8°91	1°1717	0°7077	1°3157	0°8517	1°5306	1°0666	1°6568
20	8°93	1°1699	0°7072	1°3139	0°8512	1°5288	1°0661	1°6550	1°1923
	25	8°95	1°1681	0°7063	1°3121	0°8503	1°5270	1°0652	1°6532
30	8°95	1°1662	0°7048	1°3102	0°8488	1°5251	1°0637	1°6513	1°1899
May 5	8°95	1°1642	0°7029	1°3082	0°8469	1°5231	1°0618	1°6493	1°1880

These values are to be interpolated for the times for which the positions of the satellites are required. The position-angles p and distances s are then found by means of the equations

$$s \sin(p_o - p) = b \sin \text{long.}$$

$$s \cos(p_o - p) = a \cos \text{long.}$$

Note on the Satellites of Mars and Saturn.

By A. A. Common, Esq.

The following observations of the satellite of Mars were made with an 18-inch silvered glass reflector, with powers 170 and 272. In all cases the full aperture was used under favourable atmospheric conditions. The satellite was always fairly visible when the planet was hidden behind a bar in the field. On the 15th and 16th of September it was seen well, with the planet, at times. The difficulty of getting measures of position under these circumstances was got over by the use of a modification of the old slipping piece, which is to be recommended for similar observations.